Q1) Chemical and manufacturing plants sometimes discharge toxic-waste materials such as DDT into nearby rivers and streams. These toxins can adversely affect the plants and animals inhabiting the river and the riverbank. The U.S. Army Corps of Engineers conducted a study of fish in Tennessee River (in Alabama) and its three tributary creeks: Flint Creek, Limestone Creek, and Spring Creek. A total of 144 fish were captured, and the following variables were measured for each: 1) River/creek where each fish was captured, 2) Species (channel catfish, largemouth bass, or smallmouth buffalo fish), 3) Length (centimeters), 4) Weight (grams), 5) DDT (parts per million).
   a) Identify the Cases
   b) Classify each variable as categorical or quantitative.
   c) Identify the sample
   d) Identify the population.
Q2) Ex. 3.14
Q3) Business Travel News (July 17, 2006) reported the results of its annual Travel Manager Salary & Attitude survey. A total of 277 travel professionals, 103 males and 174 females, participated in the 2005 survey. One question asked for the travel professional’s opinion on the fairness of his/her salary. Responses were classified as “salary too low”, “equitable/fair”, or “paid well”. The table below gives a breakdown of the responses in each category by gender.

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th>Females</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salary too low</td>
<td>29</td>
<td>89</td>
<td>118</td>
</tr>
<tr>
<td>Equitable/fair</td>
<td>58</td>
<td>64</td>
<td>122</td>
</tr>
<tr>
<td>Paid well</td>
<td>16</td>
<td>21</td>
<td>37</td>
</tr>
<tr>
<td>TOTAL</td>
<td>103</td>
<td>174</td>
<td>277</td>
</tr>
</tbody>
</table>
   a) What percentage of professionals are Females and think they are paid well?
   b) What percentage of Female professionals think they are paid well?
   c) Find the marginal distributions (in percentages) for gender.
   d) Find the marginal distributions (in percentages) for salary.
   e) Find the conditional distributions of salary (in percentages) for male travel professionals.
   f) Find the conditional distributions of salary (in percentages) for female travel professionals.
   g) Do the variables salary and gender appear to be independent? Explain.
Q4) The Computer security Institute (CSI) conducts an annual survey of computer crime at U.S. businesses. CSI sends survey questionnaires to computer security personnel at all U.S. corporations and government agencies. The 2010 CSI survey was sent by post or e-mail to 5,412 firms, and 351 organizations responded. One of the survey questions asked the respondents to indicate the percentage of monetary losses attributable to malicious actions by individuals within the organization (i.e. malicious insider actions). The following histogram summarizes the data for 144 firms who experienced some monetary loss due to malicious insider actions.

   a) Which measurement class contains the highest proportion?
   b) What is approximate proportion of the 144 organizations that reported a percentage monetary loss from malicious insider actions less than 20%?
   c) About how many of the 144 organizations reported a percentage monetary loss from malicious insider actions between 20% and 30%?
   d) From the histogram would you expect the mean or the median to be larger? Explain.
   e) Which summary statistics would you choose to summarize the center in these data? Explain
   f) Which summary statistics would you choose to summarize the spread in these data? Explain
Q5) Ex. 4.24 apart from the parts a, b and c, also find the standard deviation by hand.
Q6) Ex. 4.40